

19 [Seal:] Office for the Industrial Property, Netherlands

11 1024774

12 C Patent<sup>6</sup>

21 Application for patent: 1024774

22 Submitted: 13 November 2003

51 Int. Cl.<sup>7</sup> B05B7/24

30 Priority: 18 February 2003 NL 1022718

41 Registered: 22 January 2004 I.E. 2004/06

47 Date stamp: 22 March 2004

45 Issued: 1 June 2004 I.E. 2004/06

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54 Paint sprayer fitted with a paint cup, and paint cup for use with a paint sprayer

57 A paint sprayer 1 consists of a sprayer nozzle 3, a handgrip part 5 and a paint cup 7. The paint cups 7 is detachably connected via a coupling piece 29, and consists of a base part 23, a central part 25 and a neck part 27, which is fitted with a discharge opening 21. These parts 23, 25 and 27 are disposable parts, and they are detachably connected with each other via snap and screwed connections. This also allows for the use of the paint cup as a mixing cup after removal of the neck part 27, or as a storage bottle through turning on a top onto neck part 27.

Paint sprayer fitted with a paint cup, and paint cup for use with a paint sprayer

## DESCRIPTION

### **Area of the invention**

The invention relates to a paint sprayer which involves a sprayer nozzle which is fitted of an air inlet and an air outlet, which are linked with each other by way of an air duct, the handgrip part of which connected to the sprayer nozzle, whereby the air outlet of the handgrip part is connected with the air inlet of the sprayer nozzle, and whereby the handgrip part is also fitted with an operating mechanism for the sealing and opening of the connecting duct, whereby the paint sprayer includes a paint cup which is fitted with a discharge opening, and which is detachably connected to the sprayer nozzle, whereby the paint cup is situated on top of the sprayer nozzle when the sprayer nozzle is in spraying mode, whereby the paint cup includes a base part, as well as a neck part, which is fitted with the discharge opening, and a central part, which is situated between the base part and the neck part.

### **State of the technology**

A paint sprayer of this type is commonly known. In the commonly known paint sprayer, the paint cup functions as paint reservoir. Before spraying, the paint reservoir is filled with paint and fitted onto the paint sprayer. Gravity will ensure that the paint flows into the sprayer nozzle. By way of the air which flows via the air duct in the handgrip part into the spray nozzle, a pin in the paint discharge opening in the sprayer nozzle is moved, allowing paint to flow out of this opening and be picked up by the stream of air. If subsequently the use of another type of paint is desired, the paint reservoir must be emptied and cleaned, or an alternative reservoir must be used.

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The paint intended to be used for spraying generally needs to be prepared in advance, for instance by way of mixing paints of various colors, and/or by mixing a paint with thinner. This is done in a special mixing cup, which too must be cleaned after being used. Finally, after spraying, the spraying nozzle itself must be cleaned as well.

## **Summary of the invention**

The purpose of the invention is the creation of a paint sprayer of the type described in the preamble, which allows for easier and faster operation. This characterizes the invented paint sprayer described herein, because the base part and/or the neck part and the central part of the paint cup are detachably connected with each other. This allows for the initial use of the paint cup as mixing cup through the removal of the neck part. Afterwards, the neck part can be reconnected, allowing the paint cup to be fitted onto the sprayer nozzle and be used as a paint reservoir. This preempts the need to pour the mixed paint from one container to another, and to clean a [separate] mixing cup after painting, which allows for the execution of an easier and faster paint job by way of the paint sprayer in this invention.

Moreover, the paint cup is exceedingly suited to be discarded as a disposable item, in contrast to the paint reservoir of the commonly known paint sprayer, in which case there would not be a need for cleaning a paint reservoir either.

Furthermore, the neck part of the paint cup can function as a funnel, for instance when pouring paint into the mixing cup formed by the base part and the central part, making the painting job even easier.

One embodiment of the paint sprayer according to the invention is characterized by screw thread on the neck part of the paint cup near the discharge opening and on the sprayer nozzle near the paint intake, and further, by the fact that the paint sprayer contains a coupling piece, via which the paint cup is connected with the sprayer nozzle, whereby the coupling piece contains a first, or respectively, a second coupling part fitted with further screw thread, which cooperates with the screw thread on the neck part, or on the sprayer nozzle, respectively. By way of this coupling piece, the paint cup can be used with any existing paint sprayer fitted with screw thread near the paint intake, which allows the use of the paint cup with preexisting paint sprayers.

Another embodiment of the paint sprayer according to the invention is characterized by the fact that the base part is fitted with an aeration opening, which is sealed by a detachable sealing piece. As a result of the fitting of the paint cup with an aeration opening, the paint can flow from the paint cup into the sprayer nozzle during the spraying process.

In the latter case, the base part should preferably have an edge part standing away from the central part, and is the sealing piece sunk into the bottom part, in such a manner that it does not stick out beyond the edge part. This would allow for a stable placement of the paint cup on a carrying surface, with the base pointing downward.

Yet another embodiment of the paint sprayer according to the invention is characterized by the fact that the central part can be removed, and that the base part can be connected detachably with the neck part. By way of leaving out the central part, it is simple to obtain a small paint reservoir for the paint sprayer.

The invention also relates to a paint cup for application in the paint sprayer according to the invention, including a base part, a neck part and a central part between the base part and the neck part. With regard to the paint cup, the invention is characterized by the fact that the base part and/or the neck part and the central part are detachably connected with each other. With regard to embodiments of the paint cup, we refer to the appended conclusions.

### **Brief description of the drawings**

Below, the invention shall be elucidated by way of a sample embodiment of the paint sprayer and the paint cup according to the invention, as represented in the drawings. Herein,

Figure 1 shows an embodiment of the paint sprayer and the paint cup according to the invention;

Figure 2 shows the paint sprayer, but now with a smaller paint cup;

Figure 3 shows the paint sprayer with a disassembled sprayer nozzle and handgrip part;

Figure 4 shows the paint cup, and connected to it, the sprayer nozzle;

Figure 5 shows the paint cup in its components;

Figure 6 shows the smaller paint cup in its components; and  
Figure 7 shows the paint cup without the neck part, for use as a mixing cup.

### **Detailed description of the drawings**

Figure 1 shows an embodiment of the paint sprayer and the paint cup according to the invention. The paint sprayer 1 consists of a sprayer nozzle 3, a handgrip part 5 which, in this embodiment, is detachable from the sprayer nozzle, and a paint cup 7. The sprayer nozzle 3 is fitted with an air inlet 9 and a paint intake 11. The handgrip part 5 is fitted with an air supply opening 13 and an air outlet opening 15, which are connected with each other via an air duct 17. The air outlet opening 15 of the handgrip part 5 is connected to the air inlet 9 of the sprayer nozzle 3. The handgrip part 5 also has an operating mechanism 19 for the sealing and opening of the connecting duct 17.

The paint cup 7 is fitted with a discharge opening 21, and is detachably linked with the sprayer nozzle 3. In the spraying position of the sprayer nozzle shown in Figure 1, the paint cup 5 [sic - should be 7 - the translator] is situated on top of the sprayer nozzle 3, and the discharge opening 21 of the paint cup is linked to the paint intake 11 of the sprayer nozzle. The paint cup 7 has a base part 23, a central part 25, and a neck part 27, which is fitted with the discharge opening 21. These parts 23, 25, and 27 are detachably connected to each other via snap and/or screwed connections. Figures 5 through 7 shall provide a more detailed description of the paint cup.

The paint cup 7 and the sprayer nozzle 3 are linked with each other via a coupling piece 29. The coupling piece 29 consists of a first coupling part 29', which is fitted with external screw thread, and a second coupling part 29'', which is fitted with internal screw thread. The first coupling part 29' is screwed into the paint intake 11 of sprayer nozzle 3, which is fitted with internal screw thread, whereas the second coupling part 29'' is screwed to the discharge opening 21 of neck part 27 of paint cup 7, which is fitted with external screw thread.

Figure 2 shows the paint sprayer 1 again, but this time only with a small paint cup 7'. The small paint cup 7' is composed of the neck part 27, onto which the base part 23 is now directly snapped. In other words: the central part has been left out.

Figure 3 shows the paint sprayer 1 and the sprayer nozzle 3 and the handgrip part 5, which have been detached from it. The sprayer nozzle 3 with the paint cup 7 on it is snapped onto a stand 31. The handgrip part 5 can now be easily linked to the sprayer nozzle 3. Before spraying starts, several stands with sprayer nozzle and paint cup can be prepared, whereby, for instance, one paint cup might be filled with primer and another with finish. After spraying on the primer, the sprayer nozzle can be quickly put onto a stand, and the handgrip part can be connected to the other sprayer nozzle, allowing for an instant continuation of spraying.

After spraying, the paint cup 7 with the sprayer nozzle 3 can be placed on a carrying surface 33, see figure 4, after which the sprayer nozzle 3 can be easily unscrewed from the paint cup 7.

Figure 5 shows the paint cup 7 with its components 23, 25, 27, and with a top 35. The neck part 27 is fitted with external screw thread 37 near the discharge opening 21, onto which the top 35 can be screwed. The central part 25 is fitted on each of its ends with a cylindrical part 39, 41, and in between, a slightly tapered connecting piece 43. The cylindrical part 39 is fitted with internal screw thread 45, onto which the neck part 27 can be screwed. The base part 23 can be snapped onto the other cylindrical part 41.

The base part 23 is fitted with an aeration opening 47, which can be sealed by a detachable sealing piece 49. This sealing piece 49 is connected via a connecting part 51 with the rest of the base part. The base part 23 has an edge part 53 standing away from the central part 25, and which is higher than the part of the sealing piece 49 sticking out of the aeration opening 47, with as a result that the sealing piece is sunk into the base part, and that the paint cup 7 can be positioned stably with its edge part 53 onto a carrying surface.

Figure 6 shows the small paint cup 7' in its components. The small paint cup 7' consists of the neck part 27, onto which the base part 23 has now been snapped directly. In this case, the central part has been left out. The neck part 27 can also be used independently as a funnel.

Figure 7 shows the paint cup without the neck part, for use as a mixing cup 7". The mixing cup 7" consists of just the central part 25, with below it the base part 23.

Although the aforementioned description was elucidated by way of figures, it must be stated that the invention is in no way limited to the embodiment of the invention illustrated in the figures. The invention extends to all embodiments deviating from the embodiment shown in the illustration, within the framework defined by the conclusions.

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## CONCLUSIONS

1. A paint sprayer, consisting of:
  - a sprayer nozzle, which is fitted with an air supply opening and a paint intake opening,
  - a handgrip part, fitted with an air inlet and an air outlet, connected with each other by way of an air duct, the handgrip part of which connected to the sprayer nozzle, whereby the air outlet of the handgrip part is connected with the air inlet of the sprayer nozzle, and whereby the handgrip part is also fitted with an operating mechanism for the sealing and opening of the connecting duct, and
  - a paint cup fitted with a discharge opening, which is detachably connected to the sprayer nozzle, whereby the paint cup is situated on top of the sprayer nozzle when the sprayer nozzle is in spraying mode, whereby the paint cup includes a base part, as well as a neck part, which is fitted with the discharge opening, and a central part, which is situated between the base part and the neck part.

characterized by the fact that the base part and/or the neck part and the central part of the paint cup are detachably connected with each other.
2. A paint sprayer according to conclusion 1, characterized by the fact that the neck part of the paint cup is fitted with screw thread near the discharge opening, and that the sprayer nozzle is fitted with screw thread near the paint intake opening, and that the paint sprayer includes a coupling piece which connects the paint cup with the sprayer nozzle, and which contains a first, or respectively, a second coupling part fitted with further screw thread, which cooperates with the screw thread on the neck part, or on the sprayer nozzle, respectively.
3. A paint sprayer according to conclusions 1 or 2, characterized by the fact the base part is fitted with an aeration opening, which is sealed by way of a detachable sealing piece.
4. A paint sprayer according to conclusion 3, characterized by the fact the base part is fitted with an edge part standing away from the central part, whereby the sealing piece is sunk into the base part, in such a manner that it does not stick out beyond the edge part.
5. A paint sprayer according to one of the aforementioned conclusions, characterized by the fact the central part can be removed, allowing for the detachable connection of the base part with the neck part.

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6. A paint cup for use in a paint sprayer according to one of the aforementioned conclusions, consisting of a base part, a neck part and a central part situated between the base part and the neck part, characterized by the fact that the base part and/or the neck part and the central part are detachably connected with each other.
7. A paint cup according to conclusion 6, characterized by the fact that the base part is fitted with an aeration opening, which is sealed by a detachable sealing piece.
8. A paint cup according to conclusion 7, characterized by the fact the base part is fitted with an edge part standing away from the central part, whereby the sealing piece is sunk into the base part, in such a manner that it does not stick out beyond the edge part.
9. A paint cup according to conclusion 6, 7 or 8, characterized by the fact the central part can be removed, allowing for the detachable connection of the base part with the neck part.

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[pages 10 through 12 contain figures, no text - the translator]